

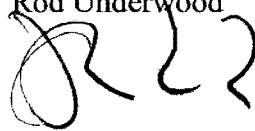
**Gardner Elementary School:  
Incorporating Multiple Intelligence Theory in Design**

An Honors Thesis (Honors 499)

by

Jamie Geringer

Thesis Advisor  
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A handwritten signature in black ink, appearing to read 'R. Underwood', with a large, stylized initial 'R'.

Ball State University  
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### *Acknowledgements*

I would like to thank Rod Underwood, my studio professor and advisor for this project. He was extremely helpful with design suggestions, critiques, and inspiration.

I would also like to thank Dr. Kristin Ritchey for providing a list of resources for this topic. She also was graciously willing to answer any questions I had along the way concerning psychology and Howard Gardner's theory.

Lastly, I would like to thank all of my fellow peers in studio who have continued to push me to achieve in design. They have been helpful throughout the years with their many ideas, comments, and critiques.

*Project Intent: Honors Thesis Proposal*  
Jamie Geringer

The kindergarten through third grade elementary school will be based on Howard Gardner's seven multiple intelligences and in concept will be similar to Key schools found across the country. Most important to Gardner's theory and central to the innovative Key schools is the importance of a well-rounded education that prepares students for excellence in the community. This theme of community will be found throughout the design of Muncie's Gardner Elementary School.

Situated along the White River and near cultural amenities such as Minnetrista and the Cardinal Greenway, the site offers unique interaction. There will be easy access to both local facilities and to on-site amenities. A nature park and agricultural field will be found on-site for the children's education. The school will be site specific, acknowledging the terrain and slopes leading to the White River. It will also be based on an open, transparent plan, reflecting the ideas of community and nature as one.

Many spaces will be capable of opening up into one another, creating a plan that is adaptable for different uses. The building itself will "open" onto the site, at times creating a limited barrier between interior and exterior. Spaces may not necessarily be defined by walls, but clear distinctions in use may preside. For example, a commons space may be defined by a terraced seating arrangement, but may be part of a more open corridor.

Constructed, the elementary school will take on an educational role in itself – expressing unique characteristics through the use of materials. Exposed materials such as wood and brick will not only reflect a greater sense of transparency between the indoors and outside world, but will also enhance visual, spatial, and textural educational cues with richness in form, texture, and color.

Finally, the building will function based on natural heating and cooling proposals.

Exterior walls and rooms may serve to naturally heat the building at night, while keep it cool during the day. Incorporating the terrain as a wall or roof may add to natural heating and cooling benefits as well. Heating and cooling equipment will serve only as a back-up system.

## *Relationships: Building and Context*

Jamie Geringer

Located along Walnut Street, children at Gardner Elementary are within walking distance to art, culture, nature and the community. The school is situated along the White River and near cultural amenities such as Minnetrista, the Cardinal Greenway, and downtown Muncie. The site offers unique interaction not only with the regional community, but with immediate context as well. On-site amenities will nurture the ideas of Howard Gardner's multiple intelligences. There will be spaces for interaction with nature and with one another to learn together as a community. A nature park and agricultural field will be found on-site for the children's education. Programs within the school will allow the children to grow, cultivate and use organic vegetables and herbs in culinary type classes. Other outdoor activities will focus on natural sciences, appealing to intrapersonal intelligence, bodily kinesthetic intelligence, spatial intelligence and environmental intelligence. Trails leading through different microenvironments, including marshes, forests and river banks, will facilitate places to carry out activities learned concepts within the classroom.

Furthermore, the elementary school will be site specific, acknowledging the terrain and slopes leading to the White River. It will also be based on an open, transparent plan, reflecting the ideas of community and nature as one—working together. The architectural solution will be centered around an indoor commons space. The classrooms, each extending off of the commons space will all open up to the north side of the site. A path along the north side will connect the classrooms to outdoor spaces, including the playground. It will also help to add to the physical boundary between the river and the school itself.

Natural day lighting will also be implemented in the building to accentuate key aspects, such as the pathway within the building. Classrooms will receive northern light, limiting potential for glare and heat gain. The site will also encompass the building, filling in the

crevices and penetrating the building—creating and dividing spaces. In this respect, the building will be permeable to its surrounding site.

## *The “Building” as a Solution*

Jamie Geringer

The kindergarten through third grade elementary school will be based on Howard Gardner’s seven multiple intelligences and in concept will be similar to Key schools found across the country. Most important to Gardner’s theory and central to the innovative Key schools is the importance of a well-rounded education that prepares students for excellence in the community. This theme of community will be found throughout the design of Muncie’s Gardner Elementary School. Children will learn based on Gardner’s multiple intelligences—linguistic, logical-mathematical, musical, bodily kinesthetic, spatial, interpersonal, intrapersonal and environmental. Learning geared towards each of these intelligences better-enables each child to grow in response to their own potential. Moreover, each child will learn to work with others and form the important interpersonal intelligence needed to function within a community.

The form will be composed of shapes, each signifying designated function and interaction with surrounding spaces. For example, the classrooms will all be placed in a staggered line, allowing interaction between classrooms as well as with the immediate natural form of the White River. The two classrooms for each grade will also be capable of opening up into one large room for larger functions. The scale found within the building will be of importance to the form as well. Window heights, short walls, ceiling heights, etc. will all be implemented in the design to create a scale more comfortable to the elementary child.

The organization of the building is one of great importance. With the concept of community it is necessary to create spaces and a plan that will be modular but also open into larger spaces. Many spaces will be capable of opening up into one another, creating a plan that is adaptable for different uses. The building itself will “open” onto the site, at times creating a limited barrier between interior and exterior. Spaces may not necessarily be defined by walls,

but clear distinctions in use may preside. For example, a commons space may be defined by a terraced seating arrangement, but may be part of a more open corridor. The commons—the centralizing element of the school—will be based on this same idea of spaces within spaces. Potentially, the commons will be capable of being used by multiple classes simultaneously, as well as by the entire school for large functions such as assemblies and morning activities. The cafeteria will not be a conventional cafeteria, but one that will be space open to the commons. Each classroom will have smaller areas within a larger space, allowing for modular activities to occur simultaneously.

Material infrastructure will play off of this idea of the open plan by giving subtle permeable divisions of space. Different flooring and wall treatments may help to distinguish areas from one another. The use of day lighting will also help to further set areas apart. Constructed, the elementary school will take on an educational role in itself – expressing unique characteristics through the use of materials. The juxtaposition of materials such as wood, brick and glass will enhance the differences between the materials used. The exposed materials such as wood and brick will carry the theme of the natural surrounding site into the building, reflecting the importance of the environment. An even greater sense of transparency between the indoors and the outside world will be made by the windows in each classroom, and the light that shines through into the spaces. These elements of material infrastructure will enhance visual, spatial, and textural educational cues through richness in form, texture, and color.

Technical infrastructure will be expressed by exposed elements such as columns and rafters. The structure will need to be capable of a large span to create open plans—especially in the commons space. The use of retaining walls will create barriers to define space, but will also be necessary to create boundaries. The mechanical systems will be secondary to natural systems



developed by the embankments of land that create a relatively low exposure to the environmental forces. Incorporating the terrain as parts of the roof may add to natural heating and cooling benefits as well.

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Howard Gardner  
**MULTIPLE INTELLIGENCES**

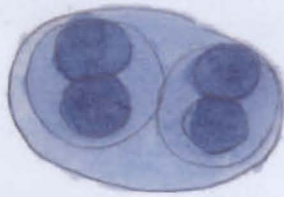
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**Linguistic   Logical-Mathematical   Musical   Bodily-Kinesthetic   Spatial   Interpersonal   Intrapersonal   Environmental**

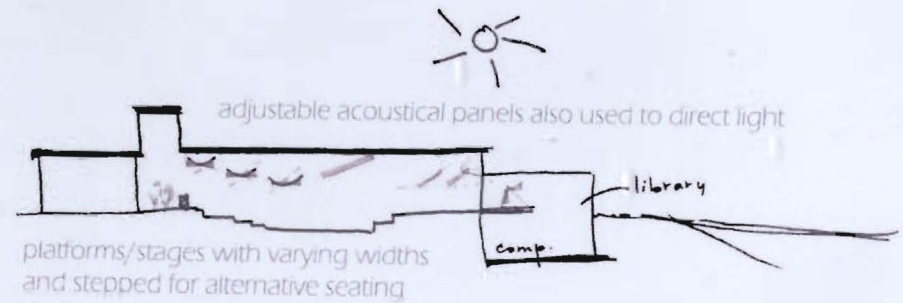
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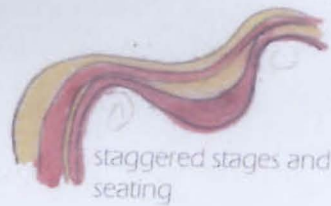
## CONCEPTS:



spaces within spaces



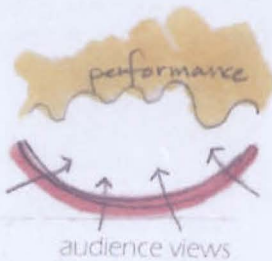
## COMMONS:



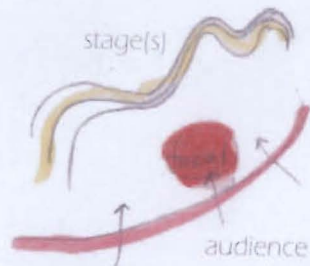
### USE/GOALS

large setting for entire school assemblies (seating with one focal zone)

before school gathering (seating with multiple zones)



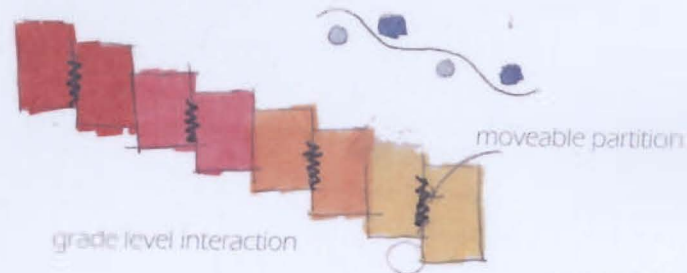
classroom activities and interaction between classes (multiple zones acting simultaneously; acoustic barriers)



acting/drama, prep space, exhibition space

performance (drama, music, dance, etc. with seating for audience)

## CLASSROOMS:

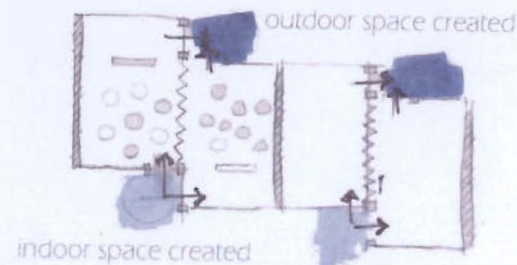


grade level interaction

### USE/GOALS:

interaction within grade level (classroom pairs)

formation of smaller "niches" within larger context (both inside classroom and on either end of classroom walls)



indoor space created

connection to the outdoors (environmental and spatial intelligences)



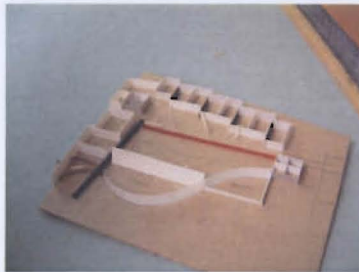
## PROCESS MODELS:

1



First, I began by trying to capture the idea of form. I used simple shapes to express different functions of the building. The curve represents the classrooms, which flow into and interact with one another.

2



My next model reflected the deeper thought that I had put into the layout of the plan. The form expressed here is more than a concept, it is the beginning of the actual form of Gardner Elementary School. Key to this model is the central axis, which serves to link parts of the building together while creating permeable boundary between spaces.

3



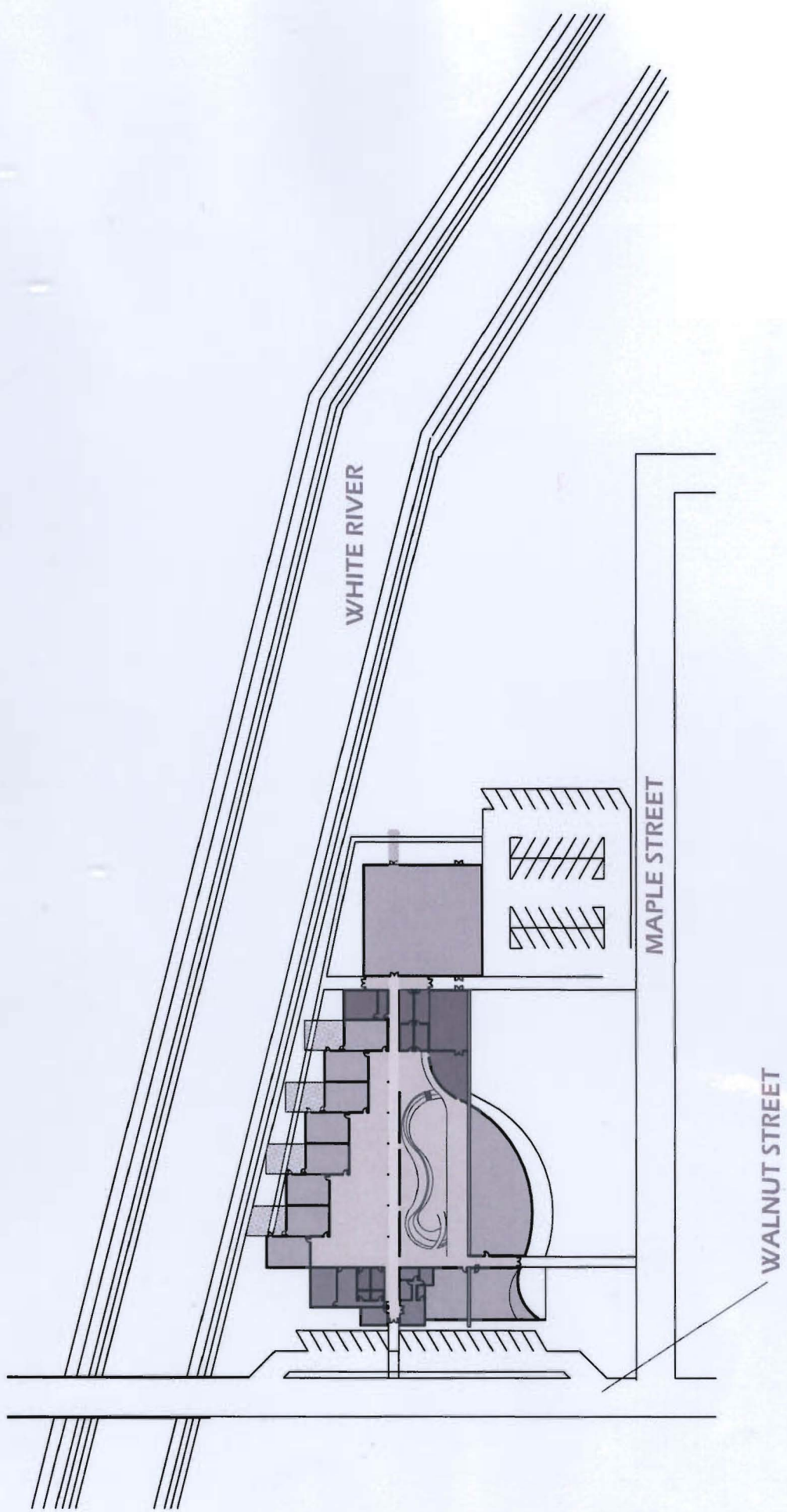
My final model represented not only the entire building form, but also the materials used. The base of the model was intended to direct attention to the lines mimicked in the design of the elementary school.

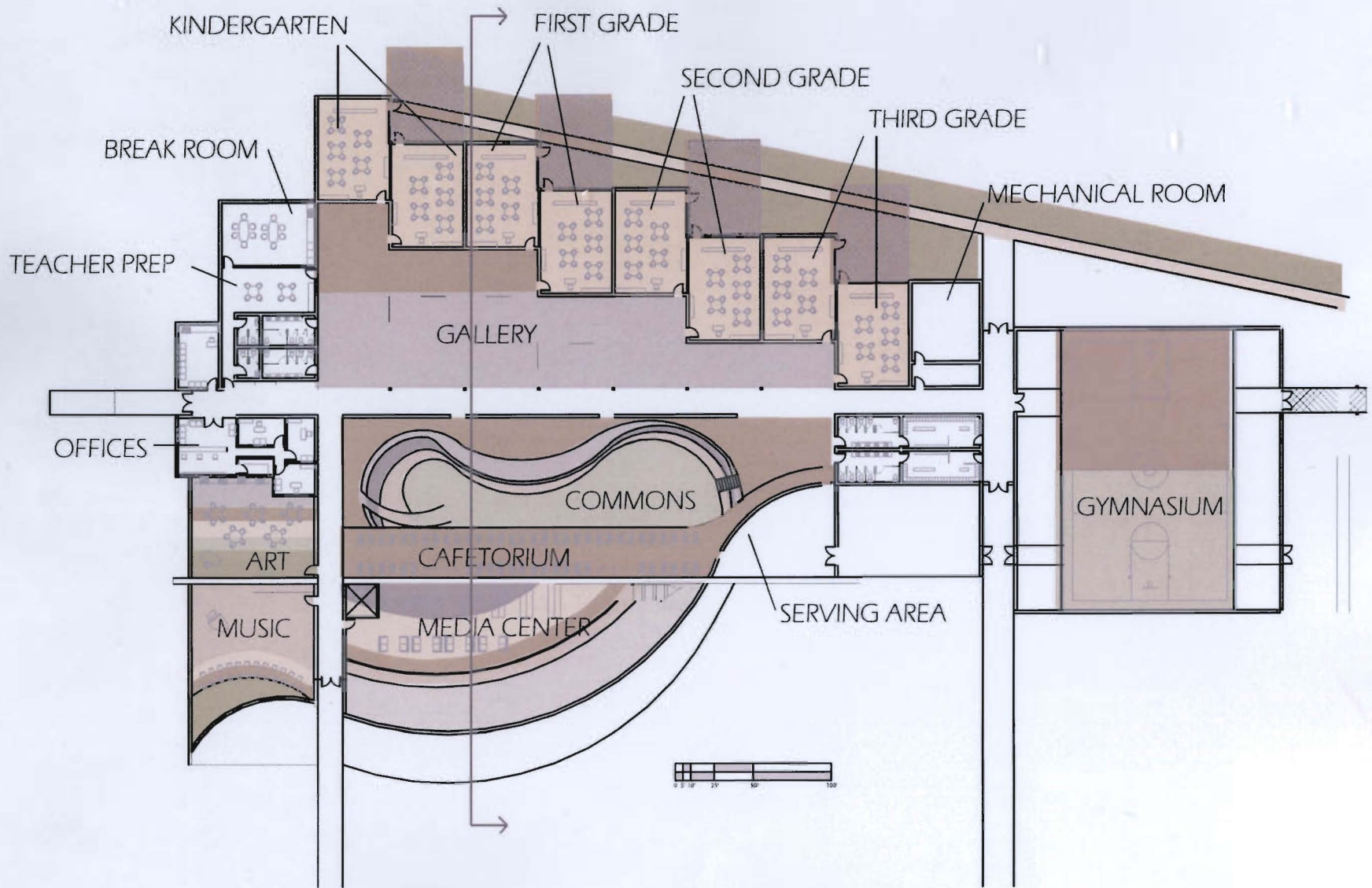
3



The final model also expressed the material choices for the exterior of the building—wood, tile, stone, and transparent and semi-transparent glazing.

SITE PLAN:





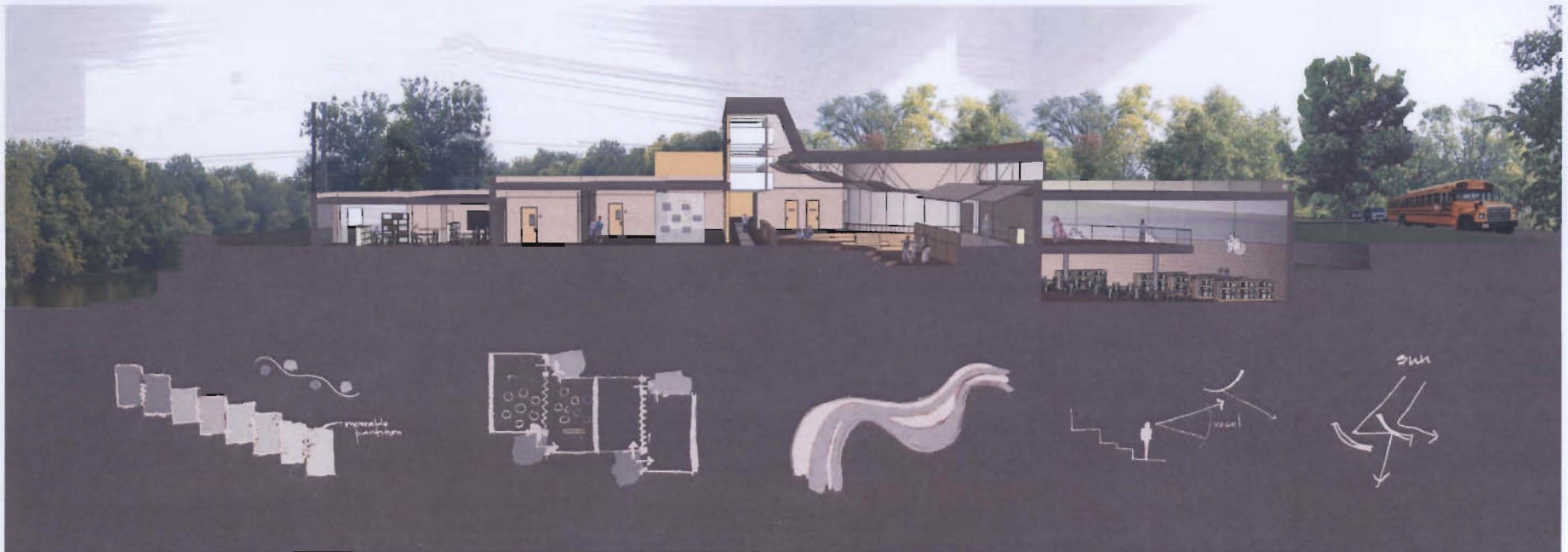
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| <span style="display: inline-block; width: 15px; height: 15px; background-color: #d1c4e9; border: 1px solid black;"></span> Logical-Mathematical | <span style="display: inline-block; width: 15px; height: 15px; background-color: #a689b6; border: 1px solid black;"></span> Spatial            | <span style="display: inline-block; width: 15px; height: 15px; background-color: #8d6e63; border: 1px solid black;"></span> Environmental |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #e67e22; border: 1px solid black;"></span> Musical              | <span style="display: inline-block; width: 15px; height: 15px; background-color: #5d4037; border: 1px solid black;"></span> Interpersonal      | <span style="display: inline-block; width: 15px; height: 15px; background-color: #f39c12; border: 1px solid black;"></span> All           |



The design of this kindergarten through third grade elementary school was based on Howard Gardner's seven+ multiple intelligences—**linguistic, logical-mathematical, musical, bodily kinesthetic, spatial, interpersonal, intrapersonal and environmental**. The central idea taken from these multiple intelligences is that of **community**. Learning geared towards each of these intelligences enables the child to grow in response to their own potential. Moreover, each child learns to work with others and form important interpersonal intelligence needed to function within a community.

The form was composed of shapes, each signifying designated function and controlled **interaction** with surrounding spaces. The classrooms were placed in a staggered line, allowing interaction between classrooms as well as with the immediate natural form of the White River. Furthermore, the two classrooms in each grade level are capable of opening up into one large room for larger functions. The commons is comprised of curved terraces showing an **expression of function**. The multimedia center is divided into two levels, with visual connection of space. The music room transforms into an indoor-outdoor classroom by use of a retractable exterior wall.

The building itself will **"open"** onto the site, at times creating a limited barrier between interior and exterior. Spaces may not necessarily be defined by walls, but clear distinctions of use may preside. For example, the commons and gallery space are open to one another, but are defined by ceiling heights, lighting change, material change, and floor levels. Each classroom has a full window wall facing north, emphasizing **transparency**. The central hallway also defines space—serving as a **permeable boundary** between functions, but also as direct axis through the school.















MEDIA CENTER